

IN THE CLAIMS:

Please cancel Claims 6, 8, and 14, without prejudice to or disclaimer of the subject matter recited therein. Please amend Claims 1 and 15, as follows.

1. (Currently Amended) An optical waveguide apparatus comprising:
a sheet-shaped optical waveguide capable of propagating light in two-dimensional directions;
a light transmitting unit for transmitting light through said waveguide;
a light receiving unit for receiving light transmitted through said waveguide;
and
relaying means for relaying light transmitted from said light transmitting unit and propagating in said waveguide at a place between said light transmitting unit and said light receiving unit to transmit the relayed light to said light receiving unit,
wherein said relaying means includes a light diffusing structure comprised of a plurality of protrusions in said waveguide.
2. (Original) The optical waveguide apparatus according to claim 1, wherein said relaying means is constructed such that a propagation condition of light propagating in said waveguide can be changed at a place on a light propagation path between said light transmitting unit and said light receiving unit in a relaying manner.

3. (Currently Amended) The optical waveguide apparatus according to claim 1, wherein said relaying means includes a structure capable of diffusing a light beam ~~propagating~~ in the form of a beam toward all 360-degree ~~all~~ directions, or toward directions of a predetermined angular range in said waveguide.

4. (Original) The optical waveguide apparatus according to claim 3, wherein said structure has a thickness less than a thickness of a core layer of said waveguide.

5. (Currently Amended) The optical waveguide apparatus according to claim 1, wherein said relaying means includes a reflective structure capable of changing a propagation direction of a light beam propagating in the form of a beam ~~with~~ while maintaining the beam form.

6. (Canceled)

7. (Original) The optical waveguide apparatus according to claim 1, wherein said relaying means includes a structure capable of changing a propagation condition of light propagating in said waveguide without processing light in a regenerative manner by amplification and shaping.

8. (Canceled)

9. (Currently Amended) The optical waveguide apparatus according to claim 1, wherein said waveguide has a structure in which a sheet-shaped core layer is sandwiched by a first cladding layer and a second cladding layer.

10. (Original) The optical waveguide apparatus according to claim 1, wherein at least one of a light emitting device in said light transmitting unit and a light receiving device in said light receiving unit is arranged on a surface of said waveguide, or in said waveguide.

11. (Original) The optical waveguide apparatus according to claim 10, further comprising an optical-path converting structure for converting at least one light beam emitted from said light emitting device into at least one light beam propagating in at least one predetermined direction, said optical-path converting structure being arranged in a portion of said waveguide below said light emitting device.

12. (Original) The optical waveguide apparatus according to claim 11, wherein said optical-path converting structure has a spherical, hemispherical, conical, wedge-shaped, or polygonal pyramid-shaped structure.

13. (Original) The optical waveguide apparatus according to claim 12, wherein said light emitting device is a single VCSEL, or an arrayed-type VCSEL, said VCSEL

being arranged such that light from said VCSEL can be coupled to a slant face or slant faces of said optical-path converting structure.

14. (Canceled)

15. (Currently Amended) An opto-electronic hybrid circuit board for combining transmission of an optical signal and transmission of an electrical signal in a hybrid manner, said apparatus comprising:

an optical waveguide apparatus, said optical waveguide apparatus including a sheet-shaped optical waveguide capable of propagating light in two-dimensional directions, a light transmitting unit for transmitting light through said waveguide, a light receiving unit for receiving light transmitted through said waveguide, and relaying means for relaying light transmitted from said light transmitting unit and propagating in said waveguide at a place between said light transmitting unit and said light receiving unit to transmit the relayed light to said light receiving unit; and

an electronic circuit layer, said electronic circuit layer being electrically connected to said optical waveguide ~~apparatus~~; apparatus.

wherein part or all of signals in said electronic circuit layer is distributed by transmission and reception of the optical signal using said optical waveguide apparatus to operate electronic equipment, and

wherein said relaying means includes a light diffusing structure comprised of a plurality of protrusions in said waveguide.